PART H-1 HAND AND PORTABLE POWERED TOOLS AND OTHER HAND-HELD EQUIPMENT

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WAC 296-24-650 Hand and portable powered tools and equipment-General.

[Order 73-5, § 296-24-650, filed 5/9/73 and Order 73-4, § 296-24-650, filed 5/7/73.]

WAC 296-24-65003 Compressed air used for cleaning. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

[Order 73-5, § 296-24-65003, filed 5/9/73 and Order 73-4, § 296-24-65003, filed 5/7/73.]

WAC 296-24-65005 Compressed air tools.

- (1) In the use of compressed air tools, care should be used to prevent the tool from being shot from the gun.
- (2) When momentarily out of use the gun should be laid in such position that the tool cannot fly out if the pressure is accidentally released. When not in use, all tools should be removed from the gun.
- (3) In disconnecting a compressed air tool from the air line, care should be exercised first to shut off the pressure and then to operate the tool to exhaust the pressure remaining in the hose.
- (4) Compressed air hose or guns shall not be pointed at or brought into contact with the body of any person. [Order 73-5, § 296-24-65005, filed 5/9/73 and Order 73-4, § 296-24-65005, filed 5/7/73.]

WAC 296-24-65007 Air hammer.

(1) Before laying down an air hammer remove tool from hammer unless it is held in place by safety catch. [Order 73-5, § 296-24-65007, filed 5/9/73 and Order 73-4, § 296-24-65007, filed 5/7/73.]

WAC 296-24-655 Guarding of portable powered tools.

[Order 73-5, § 296-24-655, filed 5/9/73 and Order 73-4, § 296-24-655, filed 5/7/73.]

WAC 296-24-65501 Portable powered tools.

- (1) Portable circular saws.
 - (a) All portable, power-driven circular saws having a blade diameter greater than 2 in. shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to covering position.
 - (b) (1)(a) of this section does not apply to circular saws used in the meat industry for meat cutting purposes.
- (2) Switches and controls.
 - (a) All hand-held powered circular saws having a blade diameter-greater than 2 inches, electric, hydraulic or pneumatic chain saws, and percussion tools without positive accessory holding means shall be equipped with a constant pressure switch or control that will shut off the power when the pressure is released. All hand-held gasoline powered chain saws shall be equipped with a constant pressure throttle control that will shut off the power to the saw chain when the pressure is released.
 - (b) All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders with discs greater than 2 inches in diameter, belt sanders, reciprocating saws, saber, scroll, and jig saws with blade shanks greater than a nominal one-fourth inch, and other similarly operating powered tools shall be equipped with a constant pressure switch or control and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

WAC 296-24-65501 (Cont.)

- (c) All other hand-held powered tools, such as, but not limited to, platen sanders, grinders with wheels 2 inches in diameter or less, disc sanders with discs 2 inches in diameter or less, routers, planers, laminate trimmers, nibblers, shears, saber, scroll, and jig saws with blade shanks a nominal one-fourth of an inch wide or less, may be equipped with either a positive "on-off" control, or other controls as described by (2)(a) and (b) of this section.
 - (i) Saber, scroll, and jig saws with nonstandard blade holders may use blades with shanks which are nonuniform in width, provided the narrowest portion of the blade shank is an integral part in mounting the blade.
 - (ii) Blade shank width shall be measured at the narrowest portion of the blade shank when saber, scroll, and jig saws have nonstandard blade holders.
 - (iii) "Nominal" in this section means +0.05 inch.
- (d) The operating control on hand-held power tools shall be so located as to minimize the possibility of its accidental operation, if such accidental operation would constitute a hazard to employees.
- (e) This subdivision does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, rock drills, garden appliances, household and kitchen appliances, personal care appliances, medical or dental equipment, or to fixed machinery.
- (3) Portable belt sanding machines. Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley. These guards shall effectively prevent the hands or fingers of the operator from coming in contact with the nip points. The unused run of the sanding belt shall be guarded against accidental contact.
- (4) Cracked saws. All cracked saws shall be removed from service.
- (5) Grounding. Portable electric powered tools shall meet the electrical requirements of chapter 296-24 WAC Part L, and WAC 296-800-280.

[Statutory Authority: RCW 49.17.010, .040, .050. 01-11-038 (Order 99-36), § 296-24-65501, filed 05/09/01, effective 09/01/01. Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-65501, filed 7/20/94, effective 9/20/94; 91-24-017 (Order 91-07), § 296-24-65501, filed 11/22/91, effective 12/24/91. Statutory Authority: RCW 49.17.040, 49.17.050, 49.17.240, chapters 43.22 and 42.30 RCW. 80-17-015 (Order 80-21), § 296-24-65501, filed 11/13/80; Order 74-27, § 296-24-65501, filed 5/7/74; Order 73-5, § 296-24-65501, filed 5/9/73 and Order 73-4, § 296-24-65501, filed 5/7/73.]

WAC 296-24-657 Pneumatic powered tools and hose.

[Order 73-5, § 296-24-657, filed 5/9/73 and Order 73-4, § 296-24-657, filed 5/7/73.]

WAC 296-24-65701 Portable tools.

- (1) The operating trigger on portable hand-operated utilization equipment shall be so located as to minimize the possibility of its accidental operation and shall be arranged to close the air inlet valve automatically when the pressure of the operator's hand is removed.
- (2) A tool retainer shall be installed on each piece of utilization equipment which, without such a retainer, may eject the tool.

[Order 73-5, § 296-24-65701, filed 5/9/73 and Order 73-4, § 296-24-65701, filed 5/7/73.]

WAC 296-24-65703 Airhose. Hose and hose connections used for conducting compressed air to utilization equipment shall be designed for the pressure and service to which they are subjected. [Order 73-5, § 296-24-65703, filed 5/9/73 and Order 73-4, § 296-24-65703, filed 5/7/73.]

WAC 296-24-660 Portable abrasive wheels.

[Order 73-5, § 296-24-660, filed 5/9/73 and Order 73-4, § 296-24-660, filed 5/7/73.]

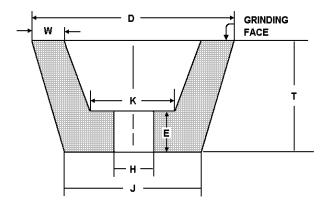
WAC 296-24-66001 Abrasive wheel terms.

- (1) Mounted wheels. Mounted wheels, usually 2-inch diameter or smaller, and of various shapes, may be either organic or inorganic bonded abrasive wheels. They are secured to plain or threaded steel mandrels.
- (2) Tuck pointing. Removal, by grinding, of cement, mortar, or other nonmetallic jointing material.
- Tuck pointing wheels. Tuck pointing wheels, usually Type 1, reinforced organic bonded wheels have diameter, thickness and hole size dimension. They are subject to the same limitations of use and mounting as Type 1 wheels defined in WAC 296-24-66001(10).

LIMITATION: Wheels used for tuck pointing should be reinforced, organic bonded.

- (4) Portable grinding. A grinding operation where the grinding machine is designed to be hand held and may be easily moved from one location to another.
- Organic bonded wheels. Organic wheels are wheels which are bonded by means of an organic material such as resin, rubber, shellac, or other similar bonding agent.
- (6) Safety guard. A safety guard is an enclosure designed to restrain the pieces of the grinding wheel and furnish all possible protection in the event that the wheel is broken in operation.
- (7) Reinforced wheels. The term "reinforced" as applied to grinding wheels shall define a class of organic wheels which contain strengthening fabric or filament. The term "reinforced" does not cover wheels using such mechanical additions as steel rings, steel cup backs or wire or tape winding.
- (8) Type 11 flaring cup wheels. Type 11 flaring cup wheels have double diameter dimensions D and J, and in addition have thickness, hole size, rim and back thickness dimensions. Grinding is always performed on rim face, W dimension. Type 11 wheels are subject to all limitations of use and mounting listed for Type 6 straight sided cup wheels definition in WAC 296-24-66001(9).

LIMITATION: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition when unthreaded hole wheels are specified the inside flat, K dimension, shall be large enough to accommodate a suitable flange



Type 11-Flaring-cup wheel side grinding wheel having a wall flared or tapered outward from the back. Wall thickness at the back is normally greater than at the grinding face (W).

WAC 296-24-66001 (Cont.)

(9) Type 6 straight cup wheels. Type 6 cup wheels have diameter, thickness, hole size, rim thickness, and back thickness dimensions. Grinding is always performed on rim face, W dimension.

LIMITATION: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition, when unthreaded hole wheels are specified, the inside flat, K dimension, must be large enough to accommodate a suitable flange.

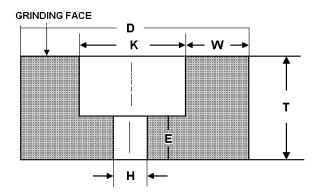


Figure No. P-2 Type 6-Straight-cup wheel

Side grinding wheel having a diameter, thickness and hole with one side straight or flat and the opposite side recessed. This type, however, differs from Type 5 in that the grinding is performed on the wall of the abrasive created by difference between the diameter of the recess and the outside diameter of the wheel. Therefore, the wall dimension "W" takes precedence over the diameter of the recess as an essential intermediate dimension to describe this shape type.

(10) Type 1 straight wheels. Type 1 straight wheels have a diameter, thickness, and hole size dimensions and should be used only on the periphery. Type 1 wheels shall be mounted between flanges.

LIMITATION: Hole dimension (H) should not be greater than two-thirds of wheel diameter dimension (D) for precision, cylindrical, centerless, or surface grinding applications. Maximum hole size for all other application should not exceed one-half wheel diameter.

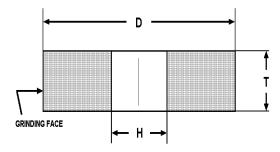


Figure No. P-3 Type 1-Straight wheel

Peripheral grinding wheel having a diameter, thickness and hole. [Order 73-5, § 296-24-66001, filed 5/9/73 and Order 73-4, § 296-24-66001, filed 5/7/73.]

WAC 296-24-66003 General requirements.

(1) All abrasive wheels shall be used only on machines provided with safety guards as defined in the following sections through WAC 296-24-66011.

Exceptions: This requirement shall not apply to the following classes of wheels and conditions.

- (a) Wheels used for internal work while within the work being ground.
- (b) Mounted wheels used in portable operations 2 inches and smaller in diameter.
- (c) Types 16, 17, 18, 18R, and 19 cones and plugs and threaded hole pot balls as illustrated and described by 1.4.11 of ANSI B 7.1-1970 Safety Code for the Use, Care and Protection of Abrasive Wheels, where the work offers protection.
- (2) The safety guard shall cover the spindle end, nut, and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard.
 - (a) Exception: Safety guards on all operations where the work provides a suitable measure of protection to the operator, may be so constructed that the spindle end, nut, and outer flange are exposed; and where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted.
 - (b) Exception: The spindle end, nut, and outer flange may be exposed on portable machines designed for, and used with, Type 6, 11, 27, and 28 abrasive wheels, cutting off wheels, and tuck pointing wheels.
 - (c) Exception: The spindle end, nut, and outer flange may be exposed on machines designed as portable saws.

[Order 74-27, § 296-24-66003, filed 5/7/74; Order 73-5, § 296-24-66003, filed 5/9/73 and Order 73-4, § 296-24-66003, filed 5/7/73.]

WAC 296-24-66005 Cup wheels. Cup wheels (Types 6 and 11) shall be guarded by:

- (1) Safety guards as specified in WAC 296-24-66003; or,
- (2) Special "revolving cup guards" which mount behind the wheel and turn with it. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. The mounting features shall conform with all regulations. (See WAC 296-24-66011.) It is necessary to maintain clearance between the wheel side and the guard. The clearance shall not exceed one-sixteenth inch; or,
- (3) Some other form of guard that will insure as good protection as that which would be provided by the guards specified in WAC 296-24-66005 (1) or (2).

[Order 73-5, § 296-24-66005, filed 5/9/73 and Order 73-4, § 296-24-66005, filed 5/7/73.]

WAC 296-24-66007 Vertical portable grinders. Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of 180°, and the guard shall be located so as to be between the operator and the wheel during use. Adjustment of guard shall be such that pieces of an accidentally broken wheel will be deflected away from the operator. (See Figure P-4.)

WAC 296-24-66007 (Cont.)

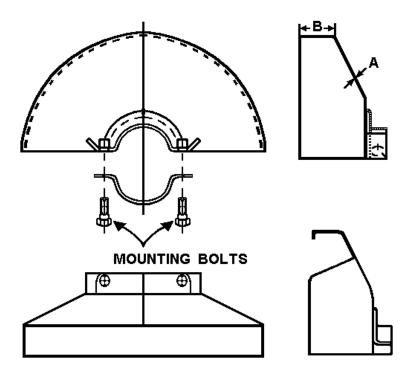


Figure No. P-4 [Order 73-5, § 296-24-66007, filed 5/9/73 and Order 73-4, § 296-24-66007, filed 5/7/73.]

WAC 296-24-66009 Other portable grinders. The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines shall not exceed 180° and the top half of the wheel shall be enclosed at all times. (See Figures P-5 and P-6.)

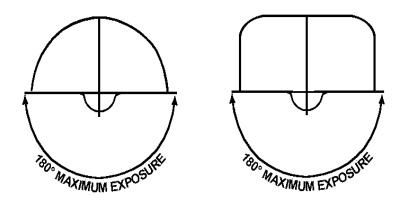


Figure No. P-5 Figure No. P-6 [Order 73-5, § 296-24-66009, filed 5/9/73 and Order 73-4, § 296-24-66009, filed 5/7/73.]

Part H-1 Hand and Portable Powered Tools and Other Hand-Held Equipment

WAC 296-24-66011 Mounting and inspection of abrasive wheels.

(1) Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel. Wheels should be tapped gently; if they sound cracked (dead), they shall not be used.

Note: Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver for light wheels, or a wooden mallet for heavier wheels. This is known as the "ring test."

(2) Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions. The machine spindle shall be made to nominal (standard) size plus zero minus .002 inch, and the wheel hole shall be made suitably oversize to assure safety clearance under the conditions of operating heat and pressure.

Note: A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion.

- (3) All contact surfaces of wheels, blotters, and flanges shall be flat and free of foreign matter.
- (4) When a bushing is used in the wheel hole it shall not exceed the width of the wheel and shall not contact the flanges.
- (5) For requirements for the use of flanges and blotters see WAC 296-24-18007.

Excluded machinery. Natural sandstone wheels and metal, wooden, cloth, or paper discs, having a layer of *Note:* abrasive on the surface are not covered by this section.

[Order 74-27, § 296-24-66011, filed 5/7/74; Order 73-5, § 296-24-66011, filed 5/9/73 and Order 73-4, § 296-24-66011, filed 5/7/73.]

WAC 296-24-663 Safety requirements for powder actuated fastening systems.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-663, filed 7/31/79.]

WAC 296-24-66301 Scope. This standard provides safety requirements for a powder actuated fastening tool or machine which propels a stud, pin, fastener, or other object for the purpose of affixing it by penetration to another object.

This standard does not apply to devices designed for attaching objects to soft construction materials, such as wood, plaster, tar, dry wallboard, and the like, or to stud welding equipment. [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66301, filed 7/31/79.]

WAC 296-24-66303 Purpose. The purpose of this standard is to provide reasonable safety for life, limb, and property, by establishing requirements for design, construction, operation, service, and storage of powder actuated fastening tools, fasteners, and power loads.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66303, filed 7/31/79.]

WAC 296-24-66305 Definitions applicable to this section.

- (1) **Angle control** - a safety feature designed to prevent a tool from operating when tilted beyond a predetermined angle.
- (2) Approved - meeting the requirements of this standard and acceptable to the department of labor and industries.
- (3) **Cased power load** - a power load with the propellant contained in a closed case.

WAC 296-24-66305 (Cont.)

- (4) **Caseless power load** a power load with the propellant in solid form not requiring containment.
- (5) **Chamber** (noun) the location in the tool into which the power load is placed and in which it is actuated.
- (6) **Chamber** (verb) to fit the chamber according to manufacturer's specifications.
- (7) **Fasteners** any pins (unthreaded heads) or studs (threaded heads) driven by powder actuated tools.
- (8) **Fixture** a special shield that provides equivalent protection where the standard shield cannot be used.
- (9) **Head** that portion of a fastener that extends above the work surface after being properly driven.
- (10) **Misfire** a condition in which the power load fails to ignite after the tool has been operated.
- (11) **Powder actuated fastening system** a method comprising the use of a powder actuated tool, a power load, and a fastener.
- (12) **Powder actuated tool (also known as tool)** a tool that utilizes the expanding gases from a power load to drive a fastener.
- (13) **Power load** the energy source used in powder actuated tools.
- (14) **Qualified operator** a person who meets the requirements of WAC 296-24-66321 (1) and (2).
- (15) **Shield** a device, attached to the muzzle end of a tool, which is designed to confine flying particles.
- (16) **Spalled area** a damaged and nonuniform concrete or masonry surface.
- (17) Test velocity the measurement of fastener velocity performed in accordance with WAC 296-24-66307 (1)(m).
- (18) **Tools** tools can be divided into two types: Direct acting and indirect acting; and three classes: Low velocity, medium velocity, and high velocity.
 - (a) **Direct-acting tool** a tool in which the expanding gas of the power load acts directly on the fastener to be driven.
 - (b) **Indirect-acting tool** a tool in which the expanding gas of the power load acts on a captive piston, which in turn drives the fastener.
 - (c) **Low-velocity tool** a tool whose test velocity has been measured ten times while utilizing the highest velocity combination of:
 - (i) The lightest commercially available fastener designed for that specific tool;
 - (ii) The strongest commercially available power load that will properly chamber in the tool;
 - (iii) The piston designed for that tool and appropriate for that fastener; that will produce an average test velocity from the ten tests not in excess of 100 meters per second (328 feet per second) with no single test having a velocity of over 108 m/s (354 ft/s).

WAC 296-24-66305 (Cont.)

- (d) **Medium-velocity tool** a tool whose test velocity has been measured ten times while utilizing the highest velocity combination of:
 - (i) The lightest commercially available fastener designed for the tool;
 - (ii) The strongest commercially available power load that will properly chamber in the tool;
 - (iii) The piston designed for that tool and appropriate for that fastener; that will produce an average test velocity from ten tests in excess of 100 m/s (328 ft/s) but not in excess of 150 m/s (492 ft/s) with no single test having a velocity of 160 m/s (525 ft/s).
- (e) High-velocity tool a tool whose test velocity has been measured ten times while utilizing the combination of:
 - (i) The lightest commercially available fastener designed for the tool;
 - (ii) The strongest commercially available power load which will properly chamber in the tool; that will produce an average velocity from the ten tests in excess of 150 m/s (492 ft/s)

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-66305, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66305, filed 7/31/79.]

WAC 296-24-66307 Requirements.

- (1) General.
 - (a) The tool shall be designed to prevent inadvertent actuation.
 - (b) The tool shall be designed to prevent actuation when dropped in any attitude from a height of 3 meters (10 ft) onto a smooth, hard surface such as concrete or steel, if such actuation can propel a fastener or any part thereof in free flight.
 - (c) Actuation of the tool shall be dependent upon at least two separate and distinct operations by the operator, with at least one operation being separate from the operation of holding the tool against the work surface.
 - (d) The tool shall be designed not to be operable other than against a work surface with a force on the work surface equal to 22 newtons (5 lb.) greater than the weight of the tool or a minimum impact energy of 4 joules (3 ft-lb).
 - (e) All tools shall be designed so that compatible protective shields or fixtures, designed, built, and supplied by the manufacturer of the tool, can be used (see WAC 296-24-66307 (2)(b), (3)(b), (4)(b) and 296-24-66313(8)).
 - (f) The tool shall be designed so that a determinable means of varying the power levels is available for selecting a power level adequate to perform the desired work (see WAC 296-24-66309(5)).
 - (g) The tool shall be designed so that all principal functional parts can be checked for foreign matter that may affect operation.

WAC 296-24-66307 (Cont.)

- (h) The tool shall be designed so that all parts will be of adequate strength to resist maximum stresses imposed upon actuation when the tool is used in accordance with the manufacturer's instructions and is powered by any commercially available power load which will properly chamber in the tool.
- (i) Each tool shall bear a legible permanent model designation, which shall serve as a means of identification. Each tool shall also bear a legible, permanent manufacturer's unique serial number.
- (j) A lockable container shall be provided for each tool. The words "POWDER ACTUATED TOOL" shall appear in plain sight on the outside of the container. The following notice shall be attached on the inside cover of the container:

"WARNING - POWDER ACTUATED TOOL. TO BE USED ONLY BY A QUALIFIED OPERATOR AND KEPT UNDER LOCK AND KEY WHEN NOT IN USE."

(k) Each tool shall bear a durable warning label with the following statement, or the equivalent:

"WARNING - FOR USE ONLY BY QUALIFIED OPERATORS ACCORDING TO MANUFACTURER'S INSTRUCTION MANUAL."

- (l) Each tool shall be supplied with the following:
 - (i) Operator's instruction and service manual.
 - (ii) Power load chart.
 - (iii) Tool inspection record.
 - (iv) Service tools and accessories.
- (m) In determining tool test velocities, the velocity of the fastener shall be measured in free flight at a distance of 2 meters (6-1/2 ft) from the muzzle end of the tool, using accepted ballistic test methods.
- (2) Design requirements low-velocity class.
 - (a) Low-velocity tools, indirect-acting (piston) type, as defined in WAC 296-24-66305, shall meet the requirements of WAC 296-24-66307(1).
 - (b) A shield shall be supplied with each tool.
- (3) Design requirements medium-velocity class.
 - (a) Medium-velocity tools, indirect-acting (piston) type, as defined in WAC 296-24-66305, shall meet the requirements of WAC 296-24-66307(1).
 - (b) The tool shall have a shield at least 63 mm (2-1/2 in) in diameter mounted perpendicular to, and concentric with, the muzzle end, when it is indexed to the center position. A special shield or fixture may be used when it provides equivalent protection.
 - (c) The tool shall be designed so that it cannot be actuated unless it is equipped with a shield or fixture.

WAC 296-24-66307 (Cont.)

- (d) The tool shall be designed with angle control so that it will not actuate when equipped with the standard shield indexed to the center position if the bearing surface of the shield is tilted more than 12 degrees from a flat surface.
- (4) Design requirements high-velocity class.
 - (a) High-velocity tools, direct-acting or indirect-acting type, as defined in WAC 296-24-66305, shall meet the requirements of WAC 296-24-66307(1).
 - (b) The tool shall have a shield at least 88 mm (3-1/2 in) in diameter mounted perpendicular to, and concentric with, the muzzle end, when it is indexed to the center position. A special shield or fixture may be used when it provides equivalent protection.
 - (c) The tool shall be designed so that it cannot be actuated unless it is equipped with a shield or fixture.
 - (d) The tool shall be designed with angle control so that it will not actuate when equipped with the standard shield indexed to the center position, if the bearing surface of the shield is tilted more than eight degrees from a flat surface.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66307, filed 7/31/79.]

WAC 296-24-66309 Power loads.

- (1) Identification of cased power loads. Cased power loads shall be coded to identify power load levels by case color and power load color as specified in Table P-1.
- (2) Identification of caseless power loads. Caseless power loads shall be coded to identify power load levels by power load color as specified in Table P-1 and by configuration.
- (3) Power load use limitation. No power load (cased or caseless) shall be used if it will properly chamber in any existing commercially available tool and will cause a fastener to have a test velocity in excess of the maximum test velocities specified for the said tool.
- (4) Identification of power load packages. Power load packages shall provide a visual number-color indication of the power level of the power load as specified in Table P-1.
- (5) Optional power load variation. Where means other than power loads of varying power levels are to be used to control penetration, such means shall provide an equivalent power level variation.

 [Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66309, filed 7/31/79.]

WAC 296-24-66311 Fasteners. Fasteners for use in powder actuated tools shall be designed and manufactured to function compatibly with these tools and, when used in masonry, concrete, or steel, to effect properly the application for which they are recommended.

WAC 296-24-66311 (Cont.)

TABLE P-1 Power Load Identification

C	olor Identification		Nominal velocity	
Power Level	Case Color	Load Color	Meters per Second (± 13.5)	Feet per Second (± 45)
1	Brass	Gray	91	300
2	Brass	Brown	119	390
3	Brass	Green	146	480
4	Brass	Yellow	174	570
5	Brass	Red	201	660
6	Brass	Purple	229	750
7	Nickel	Gray	256	840
8	Nickel	Brown	283	930
9	Nickel	Green	311	1020
10	Nickel	Yellow	338	1110
11	Nickel	Red	366	1200
12	Nickel	Purple	393	1290

Note: The nominal velocity applies to a 9.53 mm (3/8-in) diameter 22.7-gram (350-grain) ballistic slug fired in a test device and has no reference to actual fastener velocity developed in any specific tool.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66311, filed 7/31/79.]

WAC 296-24-66313 Operation.

- (1) Only tools meeting the requirements of this standard shall be used.
- (2) Only qualified operators shall operate tools.
- (3) The lowest velocity class of tool that will properly set the fastener shall be used.
- (4) Tools shall be operated in strict accordance with the manufacturer's instructions.
- (5) Eye or face protection, or both, shall be worn by operators, assistants, and adjacent personnel when tool is in use. Hearing protection shall be used when making fastenings in confined areas.
- (6) Each day, prior to use, the operator shall inspect the tool to determine that it is in proper working condition in accordance with the testing methods recommended by the manufacturer of the tool.
- (7) Any tool found not to be in proper working condition shall be immediately removed from service and tagged "DEFECTIVE"; it shall not be used until it has been properly repaired in accordance with the manufacturer's instructions.
- (8) The proper shield, fixture, adapter, or accessory, suited for the application, as recommended and supplied by the manufacturer, shall be used.
- (9) Only those types of fasteners and power loads recommended by the tool manufacturer shall be used.

WAC 296-24-66313 (Cont.)

- (10) Before fastening into any questionable material, the operator shall determine its suitability by using a fastener as a center punch. If the fastener point does not easily penetrate, is not blunted, and does not fracture the material, initial test fastenings shall then be made in accordance with the tool manufacturer's recommendations. (See WAC 296-24-66315(3).)
- (11) No tool shall be loaded unless it is being prepared for immediate use. If the work is interrupted after loading, the tool shall be unloaded at once.
- (12) Powder actuated magazine or clip-fed tools are not considered loaded unless a power load is actually in the ram (firing chamber), even though the magazine or clip is inserted in the tool. If work is interrupted, the firing chamber shall be cleared and the magazine or clip removed.
- (13) Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any person; hands shall be kept clear of the open barrel end.
- (14) The tool shall always be held perpendicular to the work surface when fastening into any material, except for specific applications recommended by the tool manufacturer.
- (15) In the event of a misfire, the operator shall hold the tool firmly against the work surface for a period of thirty seconds and then follow the explicit instructions set forth in the manufacturer's instructions.
- (16) Power loads of different power levels and types shall be kept in separate compartments or containers.
- (17) A sign, at least 20 x 25 cm (8 x 10 in), using boldface type no less than 2.5 cm (1 in) in height, shall be posted in plain sight on all construction projects where tools are used. The sign shall bear wording similar to the following: "POWDER ACTUATED TOOL IN USE."

[Statutory Authority: Chapter 49.17 RCW. 89-11-035 (Order 89-03), § 296-24-66313, filed 5/15/89, effective 6/30/89. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66313, filed 7/31/79.]

WAC 296-24-66315 Limitations of use.

- (1) The tool shall not be used in an explosive or flammable atmosphere.
- (2) A tool shall never be left unattended in a place where it would be available to unauthorized persons.
- (3) Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile, or most brick. (See WAC 296-24-66313(10).)
- (4) Fasteners shall not be driven into easily penetrated or thin materials, or materials of questionable resistance, unless backed by a material that will prevent the fastener from passing completely through the other side.
- (5) Fasteners shall not be driven closer than 13 mm (1/2 in) from the edge of steel except for specific applications recommended by the tool manufacturer.
- (6) Fasteners shall not be driven closer than 7.5 cm (3 in) from the unsupported edge of masonry materials except for specific applications recommended by the tool manufacturer.
- (7) Fasteners shall not be driven into concrete unless material thickness is at least three times the fastener shank penetration.

WAC 296-24-66315 (Cont.)

- (8) Fasteners shall not be driven into any spalled area.
- (9) Fasteners shall not be driven through existing holes unless a specific guide means, as recommended and supplied by the tool manufacturer, is used to ensure positive alignment.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66315, filed 7/31/79.]

WAC 296-24-66317 Maintenance and storage.

- (1) The tool shall be serviced and inspected for worn or damaged parts at regular intervals as recommended by the tool manufacturer. Prior to the tool being put back into use, all worn or damaged parts shall be replaced by a qualified person using only parts supplied by the tool manufacturer. A record of this inspection shall be noted and dated on the tool inspection record.
- (2) Instruction manuals, maintenance tools, and accessories supplied with the tool shall be stored in the tool container when not in use.
- (3) Powder actuated tools and power loads shall be locked in a container and stored in a safe place when not in use and shall be accessible only to authorized personnel.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66317, filed 7/31/79.]

WAC 296-24-66319 Authorized instructor.

- (1) Only persons trained and authorized by the tool manufacturer or by an authorized representative of the tool manufacturer shall be qualified to instruct and qualify operators for the manufacturer's powder actuated tools.
- (2) All authorized instructors shall have read and be familiar with this standard, and shall be capable of:
 - (a) Disassembling, servicing, and reassembling the tool.
 - (b) Recognizing any worn or damaged parts or defective operation.
 - (c) Recognizing and clearly identifying the colors used to identify power load levels.
 - (d) Using the tool correctly within the limitations of its use.
 - (e) Training and testing operators prior to issuing a qualified operator's card.
- All authorized instructors shall have in their possession a valid authorized instructor's card issued and signed by an authorized representative of the manufacturer. The card shall be wallet size of approximately 6 x 9 cm (2-1/2 x 3-1/2 in), and the face of the card shall bear text similar to that shown in Figure P-1.
- (4) A list of all instructors authorized by the manufacturer to instruct and qualify operators shall be maintained by the tool manufacturer and be made available to the department of labor and industries upon request.
- (5) An instructor's card may be revoked by the authorizing agent or the department of labor and industries, if they are known to have issued a qualified operator's card in violation of any regulation contained in this standard. When an instructor is no longer authorized to issue qualified operator's cards, they shall surrender their card to the authorizing agent or the department of labor and industries.

Part H-1 Hand and Portable Powered Tools and Other Hand-Held Equipment

WAC 296-24-66319 (Cont.)

AUTHORIZED INSTRUCTOR

	Powder Actuated Tools Date
(MAKE)	
Card No	Social Security No
This certifies that	·
	(NAME OF INSTRUCTOR)
-	d training in the operation and maintenance of powder actuated tools
·	(NAME OF MANUFACTURER)
and is qualified to train or	perators of
	(MAKE)
powder actuated tools.	
Model(s)	
Authorized by	
	(SIGNATURE OF AUTHORIZED INSTRUCTOR)
have received instruction	n by the manufacturer's authorized representative in the training of
nstruction of tool operator	
Date of Birth	<u></u>
	(SIGNATURE)

Figure P-1

Sample of Authorized Instructor's Card

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-66319, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66319, filed 7/31/79.]

WAC 296-24-66321 Qualified operator.

- (1) The operator shall be trained by an authorized instructor to be familiar with the provisions of this standard and the instructions provided by the manufacturer for operation and maintenance. The operator shall also be capable of:
 - (a) Reading and understanding the manufacturer's instruction manual.
 - (b) Cleaning the tool correctly.
 - (c) Recognizing any worn or damaged parts or defective operation.
 - (d) Recognizing the number-color code system used in this standard to identify power load levels. In the event the operator is unable to distinguish the colors used, the operator shall be given special instruction which will enable the operator to avoid error.
 - (e) Using a tool correctly within the limitations of its use and demonstrate competence by operating the tool in the presence of the instructor.
- (2) After training, the operator shall, substantiate competency, by satisfactorily completing a written examination provided by the manufacturer of the tool.

WAC 296-24-66321 (Cont.)

- (a) The operator's written examination shall consist of questions to establish the operator's competence with respect to:
 - (i) The requirements of this standard;
 - (ii) The powder actuated fastening system; and
 - (iii) The specific details of operation and maintenance of the tool(s) involved.
- (b) The examination shall provide a statement, attested to by the instructor, that the applicant can (or cannot) readily distinguish the colors used to identify power load levels (see WAC 296-24-66309).
- (3) Each applicant who meets the requirements as set forth in subsections (1) and (2) of this section shall receive a qualified operator's card, issued and signed by both the instructor and applicant. While using the tool, the operator shall carry this card.
- (4) The qualified operator's card supplied by the manufacturer shall be wallet size of approximately 6 x 9 cm $(2-1/2 \times 3-1/2 \text{ in})$, and the face of the card shall bear text similar to that shown in Figure P-2.
- (5) There shall be printed on the card a notation reading:

"Revocation of card - failure to comply with any of the rules and regulations for safe operation of powder actuated fastening tools shall be cause for the immediate revocation of this card."

AUTHORIZED OPERATOR

	Powder Actuated Tools Date
(MAKE)	
Card No.	Social Security No
This certifies that	
	(NAME OF OPERATOR)
-	raining in the operation and maintenance of powder actuated tools
•	(NAME OF MANUFACTURER)
Model(S)	
Trained and issued by	
(SIGNATURE OF AUTHORIZED INSTRUCTOR)
	n the safe operation and maintenance of powder actuated fastening ls specified and agree to conform to all rules and regulations
	(SIGNATURE)

Figure P-2

Sample of Authorized Instructor's Card

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-66321, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-24-66321, filed 7/31/79.]

WAC 296-24-665 Power lawnmowers.

[Order 73-5, § 296-24-665, filed 5/9/73 and Order 73-4, § 296-24-665, filed 5/7/73.]

WAC 296-24-66501 Terms.

- (1) **Blade tip circle.** The path described by the outermost point of the blade as it is rotated about its shaft axis.
- (2) **Guards.** A part or an assembly provided for shielding a hazardous area of a machine.
- (3) Catcher assemblies. Parts or combinations of parts which provide a means for collecting grass clippings or debris.
- (4) **Walk-behind mower.** A mower either pushed or self-propelled and normally guided by the operator walking behind the unit.
- (5) **Operator area, walk-behind mowers.** For discharge interference purposes, that area confined within a circle no smaller than 30 inches in diameter, the center of which is located to the rear of the mower on its longitudinal centerline 30 inches behind the nearest blade tip circle.
- (6) **Power reel mower.** A lawn-cutting machine utilizing a power source to rotate one or more helically formed blades about a horizontal axis to provide a shearing action with a stationary cutter bar or bed knife.
- (7) **Power rotary mower.** A lawn-cutting machine utilizing a power source to rotate one or more cutting blades about a vertical axis.
- (8) **Lowest blade position.** The lowest blade position under static conditions.
- (9) **Riding mower.** A powered, self-propelled lawn-cutting vehicle on which the operator rides and controls the machine.
- (10) **Sulky type mower.** Normally, a walk-behind mower which has been converted to a riding mower by the addition of a sulky.
- (11) **Deadman control.** A control designed so that it will automatically interrupt power to a drive when the operator's actuating force is removed.

[Order 73-5, § 296-24-66501, filed 5/9/73 and Order 73-4, § 296-24-66501, filed 5/7/73.]

WAC 296-24-66503 General requirements.

- (1) Power lawnmowers of the walk-behind, riding-rotary types, and reel power lawnmowers designed for use by employees shall meet the design specifications in "American National Standard Safety Specifications for Power Lawnmowers" ANSI B71.1-1968. These specifications do not apply to sulky-type mowers, flail mowers, sickle-bar mowers, or mowers designed for commercial use.
- (2) All power-driven chains, belts, and gears shall be so positioned or otherwise guarded to prevent the operator's accidental contact therewith, during normal starting, mounting, and operation of the machine.
- (3) A shutoff device shall be provided to stop operation of the motor or engine. This device shall require manual and intentional reactivation to restart the motor or engine.
- (4) All positions of the operating controls shall be clearly identified.
- (5) The words, "Caution. Be sure the operating control(s) is in neutral before starting the engine," or similar wording shall be clearly visible at an engine starting control point on self-propelled mowers.

WAC 296-24-66505 Walk-behind and riding rotary mowers.

- (1) The mower blade shall be enclosed except on the bottom and the enclosure shall extend to or below the lowest cutting point of the blade in the lowest blade position.
- (2) Guards which must be removed to install a catcher assembly shall comply with the following:
 - (a) Warning instructions shall be affixed to the mower near the opening stating that the mower shall not be used without either the catcher assembly or the guard in place.
 - (b) The catcher assembly or the guard shall be shipped and sold as part of the mower.
 - (c) The instruction manual shall state that the mower shall not be used without either the catcher assembly or the guard in place.
 - (d) The catcher assembly, when properly and completely installed, shall not create a condition which violates the limits given for the guarded opening.
- Openings in the blade enclosure, intended for the discharge of grass, shall be limited to a maximum vertical angle of the opening of 30°. Measurements shall be taken from the lowest blade position.
- (4) The total effective opening area of the grass discharge opening(s) shall not exceed 1,000 square degrees on units having a width of cut less than 27 1/2 inches, or 2,000 square degrees on units having a width of cut 27 1/2 inches or over.
- (5) The word "caution" or stronger wording, shall be placed on the mower at or near each discharge opening.
- (6) Blade(s) shall stop rotating from the manufacturer's specified maximum speed within 15 seconds after declutching, or shutting off power.
- (7) In a multipiece blade, the means of fastening the cutting members to the body of the blade or disc shall be so designed that they will not become worn to a hazardous condition before the cutting members themselves are worn beyond use.
- (8) The maximum tip speed of any blade shall be 19,000 feet per minute. [Order 74-27, § 296-24-66505, filed 5/7/74; Order 73-5, § 296-24-66505, filed 5/9/73 and Order 73-4, § 296-24-66505, filed 5/7/73.]

WAC 296-24-66507 Walk-behind rotary mowers.

- (1) The horizontal angle of the opening(s) in the blade enclosure, intended for the discharge of grass, shall not contact the operator area.
- (2) There shall be one of the following at all openings in the blade enclosure intended for the discharge of grass:
 - (a) A minimum unobstructed horizontal distance of 3 inches from the end of the discharge chute to the blade tip circle.
 - (b) A rigid bar fastened across the discharge opening, secured to prevent removal without the use of tools. The bottom of the bar shall be no higher than the bottom edge of the blade enclosure.

WAC 296-24-66507 (Cont.)

- (3) The highest point(s) on the front of the blade enclosure, except discharge openings, shall be such that any line extending a maximum of 15° downward from the horizontal toward the blade shaft axis (axes) shall not intersect the horizontal plane within the blade tip circle. The highest point(s) on the blade enclosure front, except discharge openings, shall not exceed 1 and 1/4 inches above the lowest cutting point of the blade in the lowest blade position. Mowers with a swingover handle are to be considered as having no front in the blade enclosure and therefore shall comply with WAC 296-24-66505(1).
- (4) The mower handle shall be fastened to the mower so as to prevent loss of control by unintentional uncoupling while in operation.
- (5) A positive upstop or latch shall be provided for the mower handle in the normal operating position(s). The upstop shall not be subject to unintentional disengagement during normal operation of the mower. The upstop or latch shall not allow the center or the handle grips to come closer than 17 inches horizontally behind the closest path of the mower blade(s) unless manually disengaged.
- (6) A swing-over handle, which complies with the above requirements, will be permitted.
- (7) Wheel drive disengaging controls, except deadman controls, shall move opposite to the direction of the vehicle motion in order to disengage the drive. Deadman controls shall comply with WAC 296-24-66501(11) and may operate in any direction to disengage the drive.

[Order 74-27, § 296-24-66507, filed 5/7/74; Order 73-5, § 296-24-66507, filed 5/9/73 and Order 73-4, § 296-24-66507, filed 5/7/73.]

WAC 296-24-66509 Riding rotary mowers.

- (1) The highest point(s) of all openings in the blade enclosure, front shall be limited by a vertical angle of opening of 15° and a maximum distance of 1 1/4 inches above the lowest cutting point of the blade in the lowest blade position.
- Opening(s) shall be placed so that grass or debris will not discharge directly toward any part of an operator seated in a normal operator position.
- (3) There shall be one of the following at all openings in the blade enclosure intended for the discharge of grass:
 - (a) A minimum unobstructed horizontal distance of 6 inches from the end of the discharge chute to the blade tip circle.
 - (b) A rigid bar fastened across the discharge opening, secured to prevent removal without the use of tools. The bottom of the bar shall be no higher than the bottom edge of the blade enclosure.
- (4) Mowers shall be provided with stops to prevent jackknifing or locking of the steering mechanism.
- (5) Vehicle stopping means shall be provided.
- (6) Hand-operated wheel drive disengaging controls shall move opposite to the direction of vehicle motion in order to disengage the drive. Foot-operated wheel drive disengaging controls shall be depressed to disengage the drive. Deadman controls, both hand and foot operated, shall comply with WAC 296-24-66501(11) and may operate in any direction to disengage the drive.

[Order 74-27, § 296-24-66509, filed 5/7/74; Order 73-5, § 296-24-66509, filed 5/9/73 and Order 73-4, § 296-24-66509, filed 5/7/73.]

WAC 296-24-670 Jacks.

[Order 73-5, § 296-24-670, filed 5/9/73 and Order 73-4, § 296-24-670, filed 5/7/73.]

WAC 296-24-67001 Jack terms.

(1) Jack. A jack is an appliance for lifting and lowering or moving horizontally a load by application of a pushing force.

Note: Jacks may be of the following types: Lever and ratchet, screw and hydraulic.

(2) Rating. The rating of a jack is the maximum working load for which it is designed to lift safely that load throughout its specified amount of travel.

Note: To raise the rated load of a jack, the point of application of the load, the applied force, and the length of lever arm should be those designated by the manufacturer for the particular jack considered. [Order 73-5, § 296-24-67001, filed 5/9/73 and Order 73-4, § 296-24-67001, filed 5/7/73.]

WAC 296-24-67003 Loading and marking.

- (1) The operator shall make sure that the jack used has a rating sufficient to lift and sustain the load.
- (2) The rated load shall be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means.

[Order 73-5, § 296-24-67003, filed 5/9/73 and Order 73-4, § 296-24-67003, filed 5/7/73.]

WAC 296-24-67005 Operation and maintenance.

- (1) In the absence of a firm foundation, the base of the jack shall be blocked. If there is a possibility of slippage of the cap, a block shall be placed in between the cap and the load.
- (2) The operator shall watch the stop indicator, which shall be kept clean, in order to determine the limit of travel. The indicated limit shall not be overrun.
- (3) After the load has been raised, it shall immediately be cribbed, blocked, or otherwise secured.
- (4) Hydraulic jacks exposed to freezing temperatures shall be supplied with an adequate antifreeze liquid.
- (5) All jacks shall be properly lubricated at regular intervals. The lubricating instructions of the manufacturer should be followed, and only lubricants recommended by the manufacturer should be used.
- (6) Each jack shall be thoroughly inspected at times which depend upon the service conditions. Inspections shall be not less frequent than the following:
 - (a) For constant or intermittent use at one locality, once every 6 months,
 - (b) For jacks sent out of shop for special work, when sent out and when returned,
 - (c) For a jack subjected to abnormal load or shock, immediately before and immediately thereafter.
- (7) Repair or replacement parts shall be examined for possible defects.
- (8) Jacks which are out of order shall be tagged accordingly, and shall not be used until repairs are made. [Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-24-67005, filed 7/20/94, effective 9/20/94; Order 73-5, § 296-24-67005, filed 5/9/73 and Order 73-4, § 296-24-67005, filed 5/7/73.]